

REMARKS/ARGUMENTS

By the *Office Action* of 21 April 2011, Claims 2-36 are pending in the Application, and all rejected. Applicant thanks Examiner with appreciation for the careful consideration and examination given to the Application.

Applicant submits this *Response and Amendment After Final Rejection* solely to facilitate prosecution. As such, Applicant reserves the right to present new or additional claims in this Application that have similar or broader scope as originally filed. Applicant also reserves the right to present additional claims in a later-filed continuation application that have similar or broader scope as originally filed. Accordingly, any amendment, argument, or claim cancellation presented during prosecution is not to be construed as abandonment or disclaimer of subject matter.

No new matter is believed presented in the *Response and Amendment After Final Rejection*, and all pending Claims believed allowable.

1. The Pending Claims

Although at first blush it might appear that the amended Claims 19 and 20 might raise new matter issues or raise issues requiring further consideration or searches, Applicant respectfully submits they do not. Further, while it may appear the new Claims 37-54 are either impermissibly added after *Final Office Action*, or themselves raise new matter issues or raise issues requiring further consideration or searches, Applicant respectfully submits they do not.

Applicant has significantly pared down the pending Claims to only device Claims, both a bicycle, and a training device. Method Claims have been canceled.

Further, Claims 19 and 20 are amended with the recitation of the Claims from which they depend, in order to provide independent Claims, (Claim 19 includes the recitations of Claims 2, 19 and 33, and Claim 20 includes the recitations of Claims 2 and 20), and clarified in an attempt to include rewording of some terms to more clearly link them to structure, as kindly suggested by the Examiner in the *Final Office Action*, p. 10.

New Claims 37-54 are re-presented canceled Claims, two sets for both remaining independent Claims 19 and 20. Thus, bicycle Claims 37-45, and training device Claims 46-54,

do not raise new matter issues or raise issues requiring further consideration or searches. The re-presented dependent Claims are clarified canceled Claims, to include the rewording of some terms to more clearly link them to structure, as kindly suggested by the Examiner in the *Final Office Action*, p. 10, and thus more properly related to specific terms used in the remaining two independent Claims.

2. The *Drawings* Objections

The *Drawings* are objected to in reference to Claims, now canceled, that recited structure not found by the Examiner in the *Drawings*. As those Claims are no longer pending, it is believed the objections are overcome.

3. The Claim Rejections Under § 112, Second Paragraph

Claims 8-9 are rejected under 35 USC § 112, second paragraph, and are herein canceled. As those Claims are no longer pending, it is believed the rejections are overcome.

4. The Claim Rejections Under § 103

Claims 2-7, 10-17, 19-24, 26-30 and 32-35 are rejected under 35 USC § 103(a) as allegedly being unpatentable over US Patent No. 4,909,086 to Kaneko et al. in view of GB Patent No. 2,312,193 to Searle. Claims 8-9 are rejected under 35 USC § 103(a) as allegedly being unpatentable over Kaneko et al. in view of Searle and further in view of US Patent Publication No. 20030087713 to Todd et al. Claim 18 is rejected under 35 USC § 103(a) as allegedly being unpatentable over Kaneko et al. in view of US Patent No. 5,445,036 to Hordnes et al. Claim 25 is rejected under 35 USC § 103(a) as allegedly being unpatentable over Searle in view of WO 0130643 to Roovers et al. Claims 31 and 36 are rejected under 35 USC § 103(a) as allegedly being unpatentable over Kaneko et al. in view of Searle, and in further view of US Patent No. 3,832,899 to Nicolau.

The pending Claims are now directed to a bicycle and a training device, respectively. They have in common that they recite the “sensing arrangement” in more detail, specifying that there is a part in contact with the chain, that there is a support arm, and that there is a sensor sensing deformation of the arm.

The “part in contact with the chain” is a wheel, in contact with the inner side of the chain,
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located within the span of the chain.

It is respectfully submitted that as clarified, this arrangement is not disclosed, taught, or suggested in Kaneko et al.

Kaneko et al. relates to a robot hand. This is a delicate structure, designed for small torques (note the scale of the graph: in gram.centimeters). The coupling wheels only make a rotary movement over a relatively small angle, and then back, or hold. This system is clearly not suitable in a bicycle, where the forces are high, and long-lasting.

Kaneko et al. does not mention a bicycle, even while bicycles were commonly known at that time. Kaneko et al. thus did not foresee that its mechanism could be useful in a bicycle, and gave no suggestion in that direction whatsoever.

One of skill in the art would find no help in Searle, because Searle only discloses an electrical switch, for switching a motor on or off, mechanically actuated by a lever carrying an idler wheel. It is true that Searle mentions bicycles, but the only information actually conveyed by Searle is that, in the case of a bicycle, an ON/OFF switch can be actuated by a chain-operated lever. There is no teaching of a “proportional” output signal.

Searle’s teaching of an ON/OFF switch combining with Kaneko et al. cannot lead to the present invention, as Claimed in Claims 19-20.

Thus, it is respectfully submitted that as clarified by the kind suggestion of the Examiner, the pending Claims, having better structural recitations, are novel and non-obvious over the cited prior art.

Applicant re-alleges, if necessary, prior rebuttal, but with the more concrete claim recitations related the pending Claims. The chain-contacting sensor member of the present invention must be capable of measuring a *moving* chain. Further, all of the present claims recite that the chain-contacting sensor member is rotatably mounted, being a *rotary sensing wheel*. (For both of these aspects, see, for example, US Patent Publication 20070099735, ¶[0013]). Additionally, the chain-contacting sensor member is arranged *within the span of the chain*. Lastly, the chain-contacting sensor member is in *force transmitting contact* with the inner side of the chain.

It is respectfully submitted that none of the art, alone or in combination, embody one or more of the above recitations of all the present Claims.

The Examiner alleges that he finds in Kaneko et al. a sensor “arranged within the span of the chain”, referring to a sensor with reference numeral (16), and referring to Figure 1. However, reference 16 is not a chain-contacting sensor member as recited in all the pending Claims. Further, it is not a *rotating wheel* as recited in the Claims, nor is it *arranged* within the span of the chain.

Figure 1 is a schematic side view, in which is depicted that a beam 14 supports the frame 13 and has its opposite end fixed to a stationary body 15. For the sake of the picture, the illustrator was looking for a free spot, and he found this within the picture of the chain, but that does not convey the technical information that this beam (and hence the stationary body 15) is actually located within the span of the chain.

The present Claims recite that the chain-contacting sensor member is “*within the span of the chain*”, which means actually within the two dimensional plane in which the chain lies, and figure 1, only, at best, shows a projection.

Apart from that, the sensing element actually touching the chain is a set of two small wheels 11, 12 each located *outside* the span of the chain. Reference 16 indicated the strain gauges mounted on the support beam 14.

All of the present claims recite that the chain-contacting sensor member is rotatably mounted, being a *rotary sensing wheel*; that the chain-contacting sensor member is arranged *within the span of the chain*; and that the chain-contacting sensor member is in *force transmitting contact* with the inner side of the chain. Each of these recitations is missing from Kaneko et al.

Kaneko et al. relates to a robot hand, which is much more delicate than the environment of the present invention, and in use while there is force transmission, the gears are *stationary*.

While the illustrating figure of Searle is similar to a figure illustrating the present invention, the operation of the device of Searle is quite different, and patentably distinct. According to Searle, the idler wheel C is movable and operates a switch, which in turn actuates a motor. Thus, the output action is only ON or OFF. Further, in order to be able to operate a

switch in a reliable manner, the stroke of the idler wheel (i.e. the displacement distance) must be relatively large, causing a change in the shape of the chain, as clearly shown in **Fig. 1**, and thus disturbing the balance of the chain.

In contrast, the present invention provides an electrical output signal proportional to the force difference between upper chain half and lower chain half, allowing a controller to operate a motor such as to give propulsion force proportional to the chain force, or allowing a trainer to calculate the power generated by the user. By using strain gauges measuring the bending of a supporting arm supporting the measuring wheel, the displacement distance of the measuring wheel can actually be very small, i.e. 0.1 mm or even less, in contrast to the displacement distance of the idler wheel C of Searle, which will be on the order of about 10 mm.

Applicant submits this *Response and Amendment After Final Rejection* does not raise new matter issues or raise issues requiring further consideration or searches. It is thus respectfully submitted that the pending Claims are novel and non-obvious over the cited art.

5. Fees

This *Response and Amendment After Final Rejection* is being filed within six months of the *Office Action*, and more specifically within two months. Thus, no extension of time fees are believed due.

No additional claim fees are believed due.

Nonetheless, authorization is hereby expressly given to charge any additional fees due to deposit account No. 20-1507.

CONCLUSION

By the present *Response and Amendment After Final Rejection*, this Application has been placed in full condition for allowance. Accordingly, Applicant respectfully requests early and favorable action. Should the Examiner have any further questions or reservations, the Examiner is invited to telephone the undersigned Attorney at 404.885.2773.

Respectfully submitted,

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21 May 2011

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